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EXTENSION BULLETIN No. 2
Revised Edition

LaFayette, Indiana, March, 1913

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COWPEAS AND SOY BEANS

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Cowpeas and soy beans are leguminous crops which are rapidly gaining favor in Indiana agriculture. Farmers all over the state are becoming interested in them and are learning their great value as grain and forage crops and for the improvement of soil fertility. Their power to gather nitrogen from the air, the large amount of organic matter they are capable of producing, and their beneficial effect upon the tilth of clay soils are qualities which commend them in the highest degree, to say nothing of their value as feeding stuffs.

On most Indiana soils the cowpea is primarily a forage crop, while the soy bean will generally give best results as a grain crop. Both are excellent as cover crops or green manures for plowing under, providing large amounts of organic matter rich in nitrogen. Of the two, the cowpea is perhaps to be preferred for the latter purpose, but that point is not settled. Of similar sized varieties, sometimes one will do better and sometimes the other, according to soil adaptation, degree of inoculation, etc.

For sowing after harvest, on wheat or oats stubble fields where clover has not been sown or has failed, these crops cannot be too highly recommended, as they will gather a large amount of nitrogen from the air and produce a large amount of excellent material for fall pasture or for plowing under on soils in need of organic matter. On the Station experiment fields, during the last four years, these crops have been sown after wheat harvest and have produced, on the average, 6.3 tons of green material, containing 108 pounds of nitrogen per acre. The seed may be drilled in at the rate of 1 to 1.5 bushels per acre after either double disking and harrowing or plowing and harrowing the stubble ground.

For sowing in standing corn at the time of the last cultivation by means of a one-horse wheat drill, using the middle three hoes, either the beans or peas may also be used to good advantage, although the shading by the corn will not give them the same chance as when allowed full possession of the ground after a small grain crop.

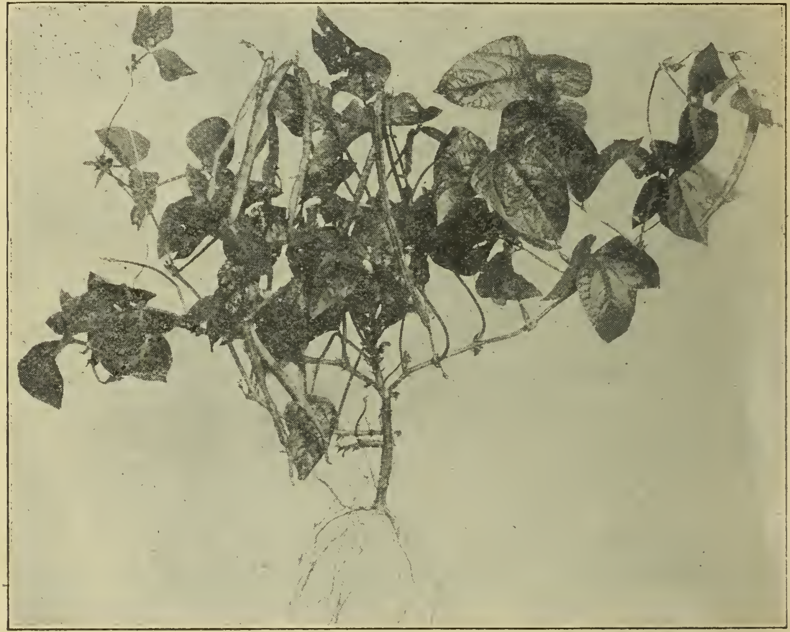

Fig. 1.—A full grown Cowpea plant, about 18 inches high, showing some vines

Many people are still confusing the cowpea and the common or "Canada" field pea. In general appearance and character of growth the two plants are as different from each other as are the common garden beans and peas. The "Canada" field pea is much like the garden pea, while the cowpea closely resembles the bean, having large broad leaves and a semi-erect habit of growth with a short, thick main stem. On account of its large leaves and stalky growth, the cowpea is not at all adapted for use in mixing with oats for forage. The common or "Canada" pea is the one that should be used for this purpose.

Soil Adaptation

Both the cowpea and soy bean will do best on good corn land, but will thrive on all types of soil that are well drained, properly inoculated and reasonably well supplied with available potash and phosphoric acid. They will do better than clover or alfalfa on thin soils or soils that are sour, but before they can do their best, sour soils must be made sweet by applications of lime and thin soils must be supplied with the mineral elements in which they are lacking. Loam and clay soils will usually be more in need of phosphoric acid; the sandy loams are likely to need both phosphoric acid and potash, and peaty or muck soils are in special need of potash. If it is not definitely known whether or not lime is needed, a trial application of a couple of tons per acre should be made on a small area and the results carefully noted. If some stable manure can be applied, so much the better, especially the first time these crops are grown. When properly inoculated, both crops will take care of their own nitrogen supply and will enrich the soil in this element. It must be clearly understood that these crops cannot thrive without food. Their mineral food must come out of the soil and they cannot get nitrogen out of air unless they are properly inoculated.

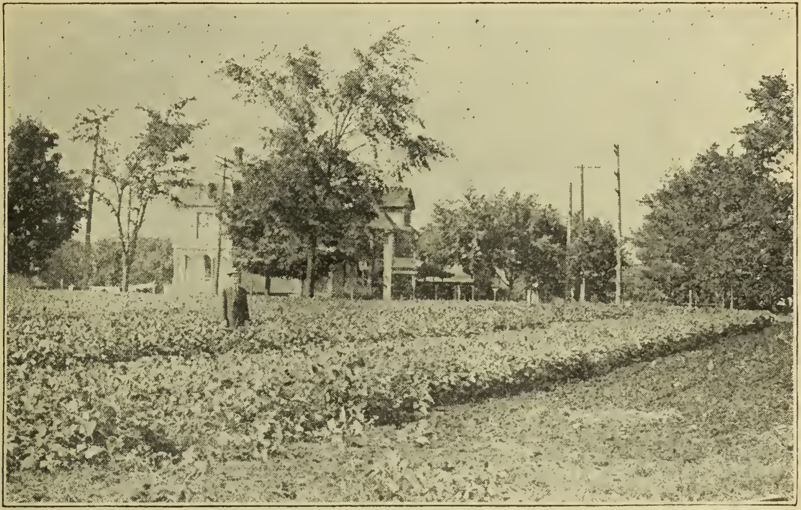

Fig. 2.—Cowpeas and Soy Beans sown after wheat harvest

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Soils which are naturally unproductive or are badly run down by long years of cropping without adequate returns cannot be expected to all at once give wonderful crops of soy beans or cowpeas. It may be necessary to do something radical in the way of a heavy application of fertilizer and plowing under a crop or two of organic matter before even a start in profitable production can be made. Wherever organic matter and nitrogen are lacking there is no quicker or cheaper method of correction than the use of one of these legumes. Many Indiana farmers who have had the experience will recognize the truth of this statement.

Soil Preparation

The soil preparation required for soy beans and cowpeas is in general the same as for corn. The seed-bed should be deep and mellow. Clay soils must be worked up as fine as possible, while sandy soils should be packed by the use of a roller or drag before seeding. Early plowing is generally preferable so as to give longer time to prepare an even, clean seed-bed.

Inoculation

In most cases in Indiana where cowpeas or soy beans are grown for the first time the soil will need to be inoculated from an outside source. In southern Indiana generally, and in some northern portions where the cow pea has been grown somewhere in the neighborhood for many years, the bacteria are pretty well distributed over all fields and inoculation is not necessary. Pure cultures may be used, but as they so often fail, it is much safer and generally cheaper to use soil from a field where the particular crop has been grown successfully. Each crop has its own particular variety of bacteria and one will not do for both.

From a gallon of soil specially rich in the desired bacteria mixed in and drilled with every bushel of seed to a few hundred pounds per acre scattered broadcast and immediately harrowed in when preparing the seed-bed may be used and can be easily applied. When once properly inoculated, soil from this field may be used for the rest of the farm.

Where the success of these crops is seriously in doubt, it is a good plan to sow and thoroughly inoculate small test plats which will later provide soil for inoculating larger fields.

When and How to Sow Cowpeas and Soy Beans

For a full crop, the best time to sow is as soon as the ground is thoroughly warm in the spring, or immediately after the best time to plant corn, although the earlier varieties may be sown some weeks later and still have time to mature. As cover crops which may be pastured in the fall or plowed under as green manures, either may be sown as late as the end of July and still make a profitable growth.

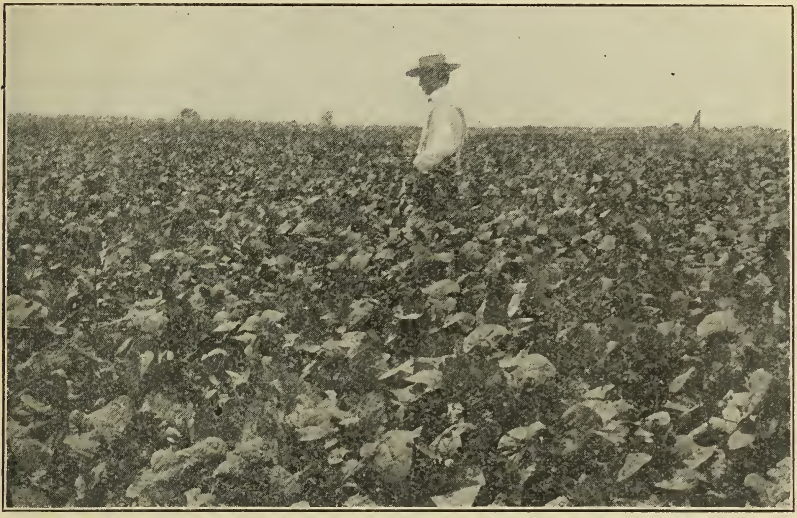

Fig. 3.—A field of Soy 'Beans, planted in rows and cultivated. The crop was about 32 inches high

For best results when the crop occupies a regular place in the rotation, the seed should be drilled in rows and the crop cultivated two or three times during the early stages of development so as to keep the surface mellow and avoid trouble with weeds. The chances are in favor of the cultivated crops, especially where the ground is weedy or inclined to crust badly after heavy rains. The drill-rows may be from 24 to 40 inches apart, according to individual preference. Rows 36 inches apart can be easily cultivated with a two-horse corn cultivator. The closer spacing of rows is preferable for hay production.

As cover crops sown later in the season, they may perhaps better be drilled solid.

The wheat drill is the most convenient implement for seeding. For drilling solid, the drill should be set at from 1½ to 2 bushels on the wheat scale, which will require from 1 to 1½ bushels of seed per acre of the medium sized varieties. For drilling in rows the drill should be set for 2 to 2½ bushels of wheat per acre, according to spacing, which will require about 25 to 30 pounds of seed per acre.

The saving of seed by drilling for cultivation will usually pay for the cost of cultivation.

In the absence of a drill, the seed may be broadcasted and harrowed in or drilled in rows with a corn planter, using bean plates.

Harvesting and Threshing

When cut for making into hay, cowpeas should be *cut soon after the first pods are fully developed.* The varieties that would be considered medium in time of maturity in any given locality if sown at the proper time in spring will be ready for making into hay about the end of August. In any case, it is not considered advisable to cut later than the first week in September as the curing of the hay becomes increasingly difficult after that time on account of heavy dews and slow drying weather. The *soy bean when used for hay should be cut at a considerably earlier stage of development than the cowpea, or soon after the pods begin to develop.* If left much later, the stems become quite woody and inferior in feeding quality.

The method of haymaking with these crops is not radically different from that used with clover, but the curing process takes a little more time. In bright weather the crop may be mowed one day, windrowed the next, turned on the third day and put up in small cocks, where it should partially cure before putting into the barn or stack two or three days later.

As seed crops, both should be cut as soon as most of the pods are ripe. At this stage the cowpea leaves may still be mostly green, but those of the soy bean will have turned yellow and mostly fallen off. If left too late, there is certain to be more or less shattering, especially with soy beans. Some varieties are very bad in this respect.

About the most satisfactory method of harvesting the seed crop is by cutting with a mower having a good side delivery attachment which clears the track for the team on the next round. The soy bean will soon be ready for storing or threshing, but the cowpea will generally require some curing.

Threshing may be done very satisfactorily with the common threshing machine arranged so as to run the cylinder at about half the usual speed for threshing wheat or oats, without changing the speed of the separator, by means of two extra pulleys which are put in place of the regular ones at either end of the cylinder shaft, and having most of the concave teeth removed and, possibly, a board put in place of the lower concave. The extra pulleys should be twice as large around as the regular ones and will cost about $10.00. Fitted in this way, the ordinary threshing machine can be made to do clean work and without splitting many seeds. A corn shredder can also be used for threshing these crops as they shell out readily when ripe and properly dried.

Varieties for Indiana

There is great variation in the time of maturity among varieties of both soy beans and cowpeas. Large numbers of varieties (over 200 of soy beans) have been tested in this state, some ripening inside of three months, while others were still grass green when destroyed by frost. It is very important, therefore, to give careful atteniton to the selection of varieties. Even with the same variety, there may be several weeks difference, according to whether the seed was northern or southern grown. Except for forage or cover crop purposes, Indiana farmers should not buy soy bean or cowpea seed grown south of the Ohio river. As there is much southern seed on the market there is special need for caution.

In deciding what to grow it should be noted that for grain production the soy bean is generally best. Under Indiana conditions the soy bean is primarily a seed crop. It usually produces more, and for feeding, the soy bean seed is much more valuable than that of the cowpea. As a hay crop, the cowpea has proven more satisfactory, generally producing larger yields and the forage is more palatable than that made from the soy bean which, at best, is harsh and woody. It should be said, however, that some of the finer stemmed, semi-erect varieties of soy beans will make a good quality of hay or green forage if cut soon after the pods begin to form.

The following varieties may be recommended:

SOY BEANS. Northern Indiana:—Ito San, Early Brown, Black Beauty.

Central and Southern Indiana:—Hollybrook, Ito San, Early Brown, Sable, Mikado.

COWPEAS. Northern Indiana:—For seed, Whippoorwill, Michigan Favorite, Early Blackeye; for forage, Whippoorwill, New Era, Michigan Favorite, Early Black.

Southern Indiana:—For seed, New Era, Whippoorwill, Early Blackeye; for forage, Iron, Clay, Black, New Era, Whippoorwill.

*Where to Get Seed

Soy bean or cowpea seed of one kind or another may be secured from the following farmers according to locality. Some of these parties will also furnish soil for inoculating purposes. In buying, the caution about southern seed should be remembered.

Soy Beans:—

Taylor Fouts, Camden, Ind.
Isaac A. Smith, Warren, Ind.
C. L. Meharry, Attica, Ind.
W. R. Butler, Kokomo, Ind.
Troyer Bros., Losantville, Ind.
F. W. Greenwell, Jr., Huntertown, Ind.
A. H. Hadley, Monrovia, Ind.
R. G. East, Worthington, Ind.
A. B. Talmage, Wabash, Ind.

Cowpeas:—

G. E. Williams, North Liberty, Ind.
W. C. Johnson, Vincennes, Ind.
Geo. S. Sanderson, Shipshewana, Ind.
W. A. Barnett, Hazelton, Ind.

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*Farmers are cautioned to examine samples of the seed before purchasing. The names and addresses are given for the convenience of farmers and the Station should not be held responsible for the quality of the seed.